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EXAMINER	
LEUNG, CHRISTINA Y	
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Please find below and/or attached an Office communication concerning this application or proceeding.

8

Office Action Summary	Application No. 10/028,830	Applicant(s) YORKS, JASON
	Examiner Christina Y. Leung	Art Unit 2613

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 December 2001*.
2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-52* is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) *1-10,20-26,28-31,39-42 and 44-52* is/are rejected.
7)☒ Claim(s) *11-19,27,32-38 and 43* is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☒ The drawing(s) filed on *20 December 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a)☐ All b)☐ Some * c)☐ None of:
1.☐ Certified copies of the priority documents have been received.
2.☐ Certified copies of the priority documents have been received in Application No. _____.
3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *12-20-01*.
4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5)☐ Notice of Informal Patent Application (PTO-152)
6)☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 43 is objected to because of the following informalities:

Examiner respectfully notes that the spelling of the word "releatively" in line 6 of claim 43 should be corrected. Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. Claims 20 and 21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 20 recites "the high speed parameters of the laser diode driver" in lines 10-11 of the claim. There is insufficient antecedent basis for this limitation in the claim because neither claim 20 nor the parent claims on which it depends previously recite such "high speed parameters." Claim 21 depends on claim 20 and is indefinite for the same reason.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 2, 4, 7, 26, 28, and 31 rejected under 35 U.S.C. 102(b) as being anticipated by Noda et al. (US 5,900,959 A).

Regarding claim 1, Noda et al. disclose a transmitter for transmitting a data signal (Figure 12), the transmitter comprising:

a driver circuit (current source 18) for generating a drive signal, the driver circuit being capable of adjusting the drive signal in response to at least one feedback signal;

a data transmitter (laser 16) for receiving the drive signal and for generating the data signal in response to the drive signal;

a first sensor (photodetector 26) capable of detecting the data signal to generate a first signal containing a first characteristic;

a second sensor (photodetector 26') capable of detecting the data signal to regenerate a second signal containing a second characteristic; and

a processor (control circuit 24') for receiving at least one of the first and second signals, for generating the at least one feedback signal in response to at least one of the first and second characteristics, and for providing the at least one feedback signal to the driver circuit.

Regarding claim 28, as similarly discussed above with regard to claim 1, Noda et al. disclose a method of adjusting signal quality of a data signal provided by a transmitter (Figure 12), the method comprising:

generating a drive signal (using current source 18);

generating the data signal in response to the drive signal (using laser 16);

splitting the data signal to at least first and second data signal portions (using optical coupler 30);

generating a first signal containing a first characteristic by detecting the first data signal portion (using photodetector 26);

generating a second signal containing a second characteristic by detecting the second data signal portion (using photodetector 26');

generating at least one feedback signal in response to at least one of the first and second characteristics; and

adjusting the drive signal in response to the at least one feedback signal (using control circuit 24'; column 3, lines 33-67; column 4, lines 1-24; column 9, lines 14-41).

Regarding claim 2, Noda et al. disclose that the data signal comprises at least one selected from a group consisting of an analog signal and a digital signal. Examiner also respectfully notes that it would be well understood in the art that any data signal such as disclosed by Noda et al. would be either an analog signal or a digital signal.

Regarding claim 4, Noda et al. disclose a power splitter (coupler 30) for splitting the data signal to at least first and second data signal portions, wherein the first sensor (photodetector 26) detects the first data signal portion and the second sensor (photodetector 26') detects the second data signal portion.

Regarding claims 7 and 31, Noda et al. disclose that the data transmitter comprises a laser 16, and the data signal comprises an optical data signal.

Regarding claim 26, Noda et al. disclose that the data signal is provided to a transmission medium for receipt by a receiving end, a portion of the transmitted data signal is reflected back from the receiving end (shown as signal P_B in Figure 12), at least one of the first and second sensors is capable of detecting the reflected back signal (i.e., photodetector 26), and wherein the processor uses the reflected back signal to generate the at least one feedback signal (column 9, lines 14-41).

5. Claims 1, 2, 4, 6, 7, 22-25, 28, 30, 31, and 52 are rejected under 35 U.S.C. 102(e) as being anticipated by McGhan et al. (US 6,842,587 B1).

Regarding claim 1, McGhan et al. disclose a transmitter for transmitting a data signal (Figure 2), the transmitter comprising:

a driver circuit for generating a drive signal (such as "laser bias current" as shown in Figure 2), the driver circuit being capable of adjusting the drive signal in response to at least one feedback signal;

a data transmitter (including laser diode 21) for receiving the drive signal and for generating the data signal in response to the drive signal;

a first sensor (PIN power monitor 29) capable of detecting the data signal to generate a first signal containing a first characteristic;

a second sensor (multi-wavelength etalon reference 23, which includes sensors as shown in Figure 4A) capable of detecting the data signal to regenerate a second signal containing a second characteristic; and

a processor (including control elements 16, 17, or 18) for receiving at least one of the first and second signals, for generating the at least one feedback signal in response to at least one of the first and second characteristics, and for providing the at least one feedback signal to the driver circuit (column 3, lines 40-67; column 4, lines 1-10).

Regarding claim 28, as similarly discussed above with regard to claim 1, McGhan et al. disclose a method of adjusting signal quality of a data signal provided by a transmitter (Figure 2), the method comprising:

generating a drive signal (such as "laser bias current" as shown in Figure 2);

generating the data signal in response to the drive signal (using laser diode 21);

splitting the data signal to at least first and second data signal portions (McGhan et al. disclose splitting a portion to multi-wavelength etalon reference 20 and splitting another portion to PIN power monitor 29);

generating a first signal containing a first characteristic by detecting the first data signal portion (using PIN power monitor 29);

generating a second signal containing a second characteristic by detecting the second data signal portion (using multi-wavelength etalon reference 23, which includes sensors as shown in Figure 4A);

generating at least one feedback signal in response to at least one of the first and second characteristics (from control elements 16, 17, or 18); and

adjusting the drive signal (again, such as "laser bias current" as shown in Figure 2) in response to the at least one feedback signal (column 3, lines 40-67; column 4, lines 1-10).

Regarding claim 2, McGhan et al. dsiclseo that the data signal comprises at least one selected from a group consisting of an analog signal and a digital signal. Examiner also respectfully notes that it would be well understood in the art that any data signal such as disclosed by McGhan et al. would be either an analog signal or a digital signal.

Regarding claim 4, McGhan et al. disclose a power splitter 40 (shown in Figure 4A) for splitting the signal to a first portion (the "90%" part) and a second portion (the "10%" part), where the first sensor (PIN power monitor 29) detects the first data signal portion (after it passes through another tap coupler 28 as shown in Figure 2), and the second sensor (mulit-wavelength etalon reference 20) detects the second data signal portion.

Regarding claims 6 and 30, McGhan et al. disclose that the second characteristic of the data signal comprises source parameters (such as the wavelength of the signal).

Regarding claims 7 and 31, McGhan et al. disclose that the data transmitter comprises a laser (laser diode 21), and the data signal comprises an optical data signal.

Regarding claims 22-24, McGhan et al. disclose that the data transmitter comprises a laser diode 21 for receiving the drive signal, wherein the drive signal comprises an electrical drive signal, the laser diode for generating an optical data signal, the optical signal includes at least one non-optimum parameter selected from a group consisting of a bit error rate, a data-eye, data integrity parameters, and discrete optical parameters (for example, McGhan et al. disclose that the optical signal includes at least a non-optimum discrete optical parameter [specifically, center wavelength, as recited in claim 24]),

the drive signal including a plurality of currents, and

wherein at least one of the plurality of currents is varied towards optimizing the at least one non-optimum parameter (column 4, lines 1-10).

Further regarding claim 23, Examiner respectfully notes that the parent claim 22 only recites that the optical signal includes "at least one non-optimum parameter "selected" from a group," wherein the optical signal does not necessarily have a non-optimum parameter that is a data integrity parameter listed in claim 23 In other words, claim 23 does not necessarily further limit claim 22 in the case where the optical data signal has a non-optimum bit error rate, data-eye, or discrete optical parameter.

Regarding claim 25, McGhan et al. disclose that the plurality of currents includes a bias current and modulation current (Figure 2; column 4, lines 1-10).

Regarding claim 52, McGhan et al. disclose a transmitter for transmitting an optical signal (Figure 2), the transmitter comprising:

a driver circuit for generating a drive signal (such as "laser bias current" as shown in Figure 2), the driver circuit being capable of adjusting the drive signal in response to at least one feedback signal;

an optical transmitter (including laser diode 21) for receiving the drive signal and for generating the optical signal in response to the drive signal;

a sensor (multi-wavelength etalon reference 23, which includes sensors as shown in Figure 4A) capable of detecting the optical signal to generate a signal with characteristics of discrete optical parameters of the data signal; and

a processor (including laser wavelength control 16) for receiving the signal, for generating the at least one feedback signal in response to the discrete optical parameters, and for providing the at least one feedback signal to the driver circuit (column 3, lines 40-67; column 4, lines 1-10);

wherein the discrete optical parameters include center wavelength.

6. Claims 1, 2, 4-7, 28-31, 39, 41, 44, 45, and 48-50 are rejected under 35 U.S.C. 102(e) as being anticipated by Shimokawa et al. (US 6,445,471 B1).

Regarding claim 1, Shimokawa et al. disclose a transmitter for transmitting a data signal (Figure 6), the transmitter comprising:

a driver circuit (LD driver 101) for generating a drive signal, the driver circuit being capable of adjusting the drive signal in response to at least one feedback signal;

a data transmitter (including laser 102) for receiving the drive signal and for generating the data signal in response to the drive signal;

a first sensor (optical spectrum analyzer 112) capable of detecting the data signal to generate a first signal containing a first characteristic;

a second sensor (photodiode 110) capable of detecting the data signal to regenerate a second signal containing a second characteristic; and

a processor (CPU 113) for receiving at least one of the first and second signals, for generating the at least one feedback signal in response to at least one of the first and second characteristics, and for providing the at least one feedback signal to the driver circuit (column 6, lines 17-21; column 7, lines 37-40).

Regarding claim 28, as similarly discussed above with regard to claim 1, Shimokawa et al. disclose a method of adjusting signal quality of a data signal provided by a transmitter, the method comprising:

generating a drive signal (using LD driver 101);

generating the data signal in response to the drive signal (using laser 102);

splitting the data signal to at least first and second data signal portions (using coupler 103);

generating a first signal containing a first characteristic by detecting the first data signal portion (using optical spectrum analyzer 112, which detects one of the signal portions output from coupler 103, after it has passed through other elements, as shown in Figure 6);

generating a second signal containing a second characteristic by detecting the second data signal portion (using photodiode 110);

generating at least one feedback signal in response to at least one of the first and second characteristics; and

adjusting the drive signal in response to the at least one feedback signal (using CPU 113).

Regarding claim 2, Shimokawa et al. disclose that the data signal comprises at least one selected from a group consisting of an analog signal and a digital signal. Examiner also respectfully notes that it would be well understood in the art that any data signal such as disclosed by Shimokawa et al. would be either an analog signal or a digital signal.

Regarding claim 4, Shimokawa et al. a power splitter (coupler 103) for splitting the data signal to at least first and second data signal portions, wherein the first sensor detects the first data signal portion and the second sensor detects the second data signal portion.

Regarding claims 5 and 29, Shimokawa et al. disclose that the first characteristic of the data signal comprises high frequency characteristics (spectrum analyzer 112 detects optical signal to noise ratios, for example; column 7, lines 37-40).

Regarding claims 6 and 30, Shimokawa et al. disclose that the second characteristic of the data signal comprises source parameters (photodiode 110 detects output power and wavelength, for example; column 6, lines 17-21).

Regarding claims 7 and 31, Shimokawa et al. disclose that the data transmitter comprises a laser 102, and the data signal comprises an optical data signal.

Regarding claim 39, Shimokawa et al. disclose a method of adjusting an optical quality of a laser diode (laser 102) output (Figure 6), the method comprising:

extracting first and second feedback data signals from the laser diode output (at couplers 103 and 111);

detecting high frequency characteristics of the laser diode output from the first feedback data signal (using optical spectrum analyzer 112);

detecting laser source characteristics of the laser diode output from the second feedback data signal (using photodiode 110); and

providing at least one feedback adjustment signal based on at least one of the high frequency characteristics and the laser source characteristics to adjust the optical quality of the laser diode output (using CPU 113).

Regarding claim 41, Shimokawa et al. disclose performing bit error rate testing using at least one of the high frequency characteristics and the laser source characteristics (column 5, lines 28-55).

Regarding claims 44 and 45, Shimokawa et al. disclose that the laser source characteristics are detected using spatial and spectral characteristics

Regarding claim 48, Shimokawa et al. disclose a method of adjusting optical quality of a plurality of laser outputs, each laser output corresponding to one of an array of lasers (i.e., lasers 102, one of which is shown in Figure 6), the method comprising:

extracting first and second feedback data signals from each laser output (using optical spectrum analyzer 112 and corresponding photodiodes 110);

detecting high frequency characteristics of the laser output from each of the first feedback data signals (spectrum analyzer 112 detects optical signal to noise ratios, for example; column 7, lines 37-40);

detecting laser source characteristics of the laser output from each of the second feedback data signals (photodiodes 110 detect output power and wavelength, for example; column 6, lines 17-21); and

providing a plurality of feedback adjustment signals based on the high frequency characteristics and the laser source characteristics, each feedback adjustment signal for adjusting optical quality of the corresponding laser output (column 6, lines 17-21; column 7, lines 37-40).

Regarding claim 49, Shimokawa et al. inherently disclose decreasing optical crosstalk between different channels of the array of lasers using the feedback adjustment signals, because they disclose providing feedback adjustment to the wavelengths of the lasers, thereby ensuring that they are properly distanced from each other.

Regarding claim 50, Shimokawa et al. disclose a transmitter for transmitting a data signal (Figure 6), the transmitter comprising:

a driver circuit (LD driver 101) for generating a drive signal, the driver circuit being capable of adjusting the drive signal in response to at least one feedback signal;

a data transmitter (including laser 102) for receiving the drive signal and for generating the data signal in response to the drive signal;

a sensor (optical spectrum analyzer 112) capable of detecting the data signal to generate a signal containing high frequency characteristics of the data signal; and

a processor (CPU 113) for receiving the signal, for generating the at least one feedback signal in response to the high frequency characteristics, and for providing the at least one feedback signal to the driver circuit.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over McGhan in view of Swartz (US 6,021,947 A).

Regarding claim 3, McGhan et al. disclose a system as discussed above with regard to claim 1 but do not specifically disclose that elements of the circuit are fabricated on a common semiconductor substrate. However, it is well known in the art that a circuit containing components such as a driver, a data transmitter, a sensor, and processor may be fabricated on a common semiconductor substrate as Swartz in particular teaches (Figure 5; column 1 1, lines 3-22; Swartz particularly teaches a transmitter in the form of a laser, like the transmitter already disclosed by McGhan). It would have been obvious to a person of ordinary skill in the art to integrate the controller components disclosed by McGhan et al. onto a single chip as taught by Swartz in order to manufacture the transmitter controlling circuit efficiently and compactly.

9. Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimokawa et al.

Regarding claims 8-10, Shimokawa et al. disclose a system as discussed above with regard to claim 1 but do not specifically disclose that the first sensor has at least as high bandwidth characteristics or at least as low noise characteristics as a sensor expected to be provided at a receiver end to detect the data signal.

However, Shimokawa et al. disclose that the first sensor 112 provides information on the signal to noise ratio of the transmitted signals (column 7, lines 37-40), and it is well understood in the art that such signal to noise feedback information is more useful if it is an accurate representation of what is actually received at the receiving end. Regarding claims 8-10, it would have been obvious to a person of ordinary skill in the art to ensure that the first sensor in the system disclosed by Shimokawa et al. has at least as high bandwidth characteristics or at least as low noise characteristics as a sensor expected to be provided at a receiver end in order to provide more useful feedback information that represents signal to noise characteristics at the receiving end.

Further regarding claim 10 in particular, if the first sensor has higher noise or lower bandwidth than the receiver at the receiving end, it would have been obvious to a person of ordinary skill in the art to provide equalization to compensate higher noise or lower bandwidth of the first sensor so that the first sensor is adjusted to be more like the receiver. One in the art would have been particularly motivated to provide equalization so that the first sensor can thereby provide feedback information that is a more accurate representation of what is actually received at the receiving end.

10. Claims 40, 42, and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimokawa et al. in view of Aulet et al. (US 5,546,325 A).

Regarding claims 40 and 42, Shimokawa et al. disclose a method as discussed above with regard to claim 39, including detecting some characteristics of the laser diode output, but do not specifically disclose spec-compliance testing. However, Aulet et al. teach that spec-compliance testing by comparing at least one of discrete optical parameters and at least one of discrete

optical data integrity parameters against predetermined limit values may be performed on optical transmitters (column 2, lines 18-36). Regarding claims 40 and 42, it would have been obvious to a person of ordinary skill in the art to perform spec-compliance testing by comparing certain parameters of the laser diode to predetermined limit values as suggested by Aulet et al. in the transmitter system disclosed by Shimokawa et al. in order to ensure that the transmitter conforms to desired operating specifications.

Regarding claim 51, Shimokawa et al. disclose a system as discussed above with claim 50 but do not specifically disclose that the high frequency characteristics comprise at least one selected from a group consisting of rise and fall times, overshoot and undershoot, duty cycle distortion, data dependent jitter, periodic jitter, and random jitter. However, Aulet et al. particularly teach that characteristics such as rise and fall times, duty cycle distortion, and data dependent jitter may be measured and used to evaluate an optical transmitter (column 2, lines 28-36). It would have been obvious to a person of ordinary skill in the art to use a characteristic selected from rise and fall times, duty cycle distortion, and data dependent jitter such as taught by Aulet et al. in the system disclosed by Shimokawa et al. to evaluate and further optimize the optical transmitter. One in the art would have been particularly motivated to use a characteristic selected from rise and fall times, duty cycle distortion, and data dependent jitter such as taught by Aulet et al. in the system disclosed by Shimokawa et al. since Aulet et al. teach that operating specifications may dictate limit values for those characteristics (i.e., a minimum acceptable amount of jitter or distortion, etc.) and it would advantageous to measure the characteristics to readjust the transmitter accordingly.

11. Claims 46 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimokawa et al. in view of Onaka et al. (US 5,894,362 A).

Regarding claim 46, Shimokawa et al. disclose a transmitter for transmitting a plurality of data signals (Figure 6), the transmitter comprising:

a driver circuit (including a plurality of LD driver elements 101, one of which is shown in Figure 6) for generating a plurality of drive signals, the driver circuit being capable of adjusting the drive signals in response to a plurality of feedback signals (indicated by the dotted line in Figure 6), at least one feedback signal corresponding to each drive signal;

a data transmitter (including lasers 102, one of which is shown in Figure 6) for receiving the drive signals and for generating the data signals in response to the drive signals;

a plurality of first sensors (including photodiodes 110, one of which is shown in Figure 6), each first sensor being capable of detecting one of the data signals to generate a corresponding one of a plurality of first signals containing first characteristics;

an optical spectrum analyzer 112, capable of detecting the data signals to generate corresponding a second signal containing second characteristics;

a processor (CPU 113) for receiving the first signals and the second signal, for generating the feedback signals in response to the first and second characteristics, and for providing the feedback signals to the driver circuit.

Shimokawa et al. disclose optical spectrum analyzer 112, in addition to the photodiodes 110, for sensing the signals to generate a second characteristic. They do not explicitly disclose a plurality of second sensors as recited in the claims, but it is well understood in the art that an optical spectrum analyzer such as disclosed by Shimokawa et al. separately senses a plurality of

signals of different wavelengths. Furthermore, Onaka et al. particularly teach a system that is related to the one disclosed by Shimokawa et al., including a spectrum analyzer for monitoring signals. Onaka et al. further teach that a spectrum analyzer may be implemented using a plurality of photodiodes 10 for detecting a corresponding plurality of signals (Figure 2; column 4, lines 32-67; column 5, lines 1-10).

It would have been obvious to a person of ordinary skill in the art to specifically include a plurality of second sensors as taught by Onaka et al. in the system disclosed by Shimokawa et al. in order to effectively implement the already disclosed spectrum analyzer. Also, one in the art would be particularly motivated to use a plurality of sensors as taught by Onaka et al. to implement the spectrum analyzer because the design advantageously does not require moving parts (Onaka et al., column 4, lines 65-67; column 5, lines 1-10).

Regarding claim 47, Shimokawa et al. disclose that the data transmitter comprises a laser array for receiving the drive signals and for generating the data signals, wherein the data signals comprise optical data signals, wherein the feedback signals are used to adjust optical quality of the optical signals (column 3, lines 16-24; column 5, lines 15-20).

Allowable Subject Matter

12. Claims 11-19, 27, 32-38, and 43 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

13. Claims 20 and 21 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

14. The following is a statement of reasons for the indication of allowable subject matter:

The prior art, including McGhan et al. and Shimokawa et al., does not specifically disclose or fairly suggest a system or method including all the elements, steps, and limitations recited in claims 11-21, 27, 32-38, and 43 (including all the limitations of the parent claims on which they depend), particularly

in a transmitter including the particular combination of elements recited in claim 1, the processor further comprises means for emulating channel degeneration being capable of degenerating the first signal based on the at least one feedback signal to generate a degenerated data signal which emulates the data signal as detected at a receiver end; or

in a transmitter including the particular combination of elements recited in claim 1, the driver circuit further comprises a phase lock loop and at least one of the feedback signals is used to adjust its bandwidth and gain; or

in a transmitter including the particular combination of elements recited in claims 1 and 26, a data-eye of the data signal is compared against the data eye of the reflected back signal to determine the data-eye of the transmitted data signal expected to be detected at the receiving end; or

in a method including the particular combination of steps recited in claim 28, the method further comprises degenerating the first signal by emulating channel degeneration and applying the first signal to the emulation of channel degeneration, wherein the degenerated first signal emulates the data signal as detected by a sensor at a receiver end; or

in a method including the particular combination of steps recited in claims 39, 40, and 42, further comprising increasing margin of at least one of the discrete parameters, a data-eye, and a

bit error rate having relatively low margin at the risk of potentially generating at least one of the discrete parameters, the data-eye, and the bit error rate having relatively high margin.

Conclusion

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christina Y. Leung whose telephone number is 571-272-3023. The examiner can normally be reached on Monday to Friday, 6:30 to 3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 571-272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-2600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Christina Y Leung
CHRISTINA LEUNG
PRIMARY EXAMINER